



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : <b>C23C 16/40, 16/34</b>	<b>A1</b>	(11) International Publication Number: <b>WO 00/42233</b> (43) International Publication Date: <b>20 July 2000 (20.07.00)</b>
(21) International Application Number: <b>PCT/US00/00013</b> (22) International Filing Date: <b>12 January 2000 (12.01.00)</b> (30) Priority Data: 60/115,854                      13 January 1999 (13.01.99)                      US (71) Applicant (for all designated States except US): <b>CORNELL RESEARCH FOUNDATION, INC. [US/US]; 20 Thornwood Drive, Suite 105, Ithaca, NY 14850 (US).</b> (72) Inventors; and (75) Inventors/Applicants (for US only): <b>CRAIGHEAD, Harold, G. [US/US]; 21 Fairway Drive, Ithaca, NY 14850 (US). TURNER, Stephen, W. [US/US]; 17 Sheraton Drive, Ithaca, NY 14850 (US). FOQUET, Mathieu, E. [US/US]; 1551/2 Westview Lane, Ithaca, NY 14850 (US).</b> (74) Agents: <b>COOPER, George, M. et al.; Jones, Tullar &amp; Cooper, P.C., P.O. Box 2266 Eads Station, Arlington, VA 22202 (US).</b>		(81) Designated States: <b>CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</b>  Published With international search report.  <div data-bbox="1360 359 1507 579" style="text-align: right;">           K-986 U.S. PTO  <b>09/905027</b>              07/13/01         </div>
(54) Title: <b>MONOLITHIC FABRICATION OF FLUIDIC STRUCTURES</b>		
(57) Abstract  <div style="display: flex;"> <div style="flex: 1;"> <p>A new technique for fabricating two-dimensional and three-dimensional fluid microchannels for molecular studies includes fabricating a monolithic unit using planar processing techniques adapted from semiconductor electronics fabrication. A fluid gap between a floor layer (12) and a ceiling layer (20) is provided by an intermediate patterned sacrificial layer (14) which is removed by a wet chemical etch. The process may be used to produce a structure such as a filter or artificial gel by using Electron beam lithography to define a square array of 100 nm holes (30) in the sacrificial layer. CVD silicon nitride (54) is applied over the sacrificial layer and enters the array of holes to produce closely spaced pillars. The sacrificial layer can be removed with a wet chemical etch through access holes in the ceiling layer, after which the access holes are sealed with VLTO silicon dioxide (64).</p> </div> <div style="flex: 1; text-align: center;"> </div> </div>		